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| 10/806,591 | 03/23/2004 | Matthew R. Sivik | 3258 | 2464 |

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THE LUBRIZOL CORPORATION
Patent Administrator - Mail Drop 022B
29400 Lakeland Boulevard
Wickliffe, OH 44092-2298

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| EXAMINER |
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LANG, AMY T

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| ART UNIT | PAPER NUMBER |
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3731

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
|--|------------|---------------|
| 3 MONTHS | 03/06/2007 | PAPER |

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

ED

Office Action Summary

Application No.

10/806,591

Applicant(s)

SIVIK ET AL.

Examiner

Amy T. Lang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 December 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) 2-4,9 and 15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 5-8, 10-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior office action.

The new grounds of rejection set forth below are necessitated by applicant's amendment filed on 12/15/2006. In particular, claims 1 and 13. This combination of limitations was not present in the original claims. Thus, the following action is properly made final.

Response to Arguments

Applicant's arguments filed 12/15/2006 have been fully considered but they are not persuasive.

1. Specifically, applicant argues (A) that the composition of Olson does not comprise a grease

With respect to argument (A), the applicant argues that a grease composition comprises (i) a thickener and (ii) a fluid lubricant (see Remarks and Amendments, page 12). Olson does disclose a lubricating oil (column 5, lines 23-26) and a grease thickener, 12-hydroxystearic acid (column 5, lines 33-42). Therefore, based on the definition of grease provided by the applicant, it is the examiner's position that the composition of Olson comprises grease.

Claim Objections

2. Claims 1 and 13 are objected to because these claims disclose wherein "T is a hydrocarbonyl group or mixtures thereof." However, only one group is present, which cannot comprise a mixture.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 5 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 5, which is dependent from claim 1, discloses wherein the non-polymeric hydrocarbonyl dicarbonyl derivative is selected from such compounds as succinic acid or azelaic acid. However, the non-polymeric hydrocarbonyl dicarbonyl derivative disclosed in claim 1 comprises a hydrocarbonyl substituent on Z. Both succinic acid and azelaic acid would comprise only hydrogen on Z. Therefore, it is the examiner's position that it is unclear how succinic acid or azelaic acid can be a derivative of the compounds in claim 1.

5. Claim 6 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 6, which is dependent from claim 1, discloses wherein the non-polymeric hydrocarbyl substituted derivative comprises such compounds as nonyl succinic acid. However, claim 1 discloses compounds where it is the examiner's position that each Z is substituted with a hydrocarbyl. Therefore, if Z comprises 2 carbon atoms and T is a nonyl group, the resulting compound would be dinonyl succinic acid. This is clearly not the same compound as claimed in claim 6. Therefore, it is the examiner's position that claim 6 is unclear.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1 and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Olson (US 5,308,514).

Given that the instant claims teach that succinic acid comprises a non-polymeric hydrocarbyl substituted dicarbonyl group, it is the examiner's position that the succinic acid of Olson reads on claim 1.

Olson discloses a grease composition comprising overbased calcium sulfonate containing solid particles of colloidally dispersed calcium carbonate in the form of calcite (column 1, lines 4-16). The grease composition also contains lubricating oil and a salt forming acid (column 4, lines 20-28; column 5, lines 23-26). Olson further discloses the

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acid as an orthophosphoric acid, which clearly overlaps the instantly claimed inorganic acid (column 4, lines 20-22). In another embodiment, the salt forming acid is an organic acid, specifically succinic acid (column 4, lines 20-26).

8. Claim 10 is rejected under 35 U.S.C. 102(b) as being anticipated by Olson (US 5,308,514) in view of the evidence given by Muir (US 4,560,489).

Given that the instant claims teach that succinic acid comprises a non-polymeric hydrocarbyl substituted dicarbonyl group, it is the examiner's position that the succinic acid of Olson reads on claim 1.

Olson, as discussed in paragraph 7 and incorporated here by reference, discloses a grease composition comprised of an overbased organic acid, an acid producing compound, and lubricating oil. The composition further comprises 12-hydroxystearic acid as a soap forming fatty acid (column 4, lines 14-19; Example 1, column 8).

While Olson does not explicitly disclose a thickening agent, Muir provides evidence that 12-hydroxystearic acid is a known thickener to a grease composition (column 3, lines 9-17). Therefore Olson does in fact teach a thickening agent.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

11. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brenda (US 5,830,832) in view of Cain (US 2003/0000866 A1).

Brenda discloses an additive for imparting detergent, extreme pressure properties, antiwear, anticorrosion, and anitrust properties to numerous compositions (35-41). The additive comprises a reaction product of succinic acid substituted with an olefin polymer of ethylene monomers and colloiddally dispersed calcium carbonate (column 3, lines 11-18; column 4, lines 12-14). It is the examiner's position that the olefin polymer comprises a hydrocarbly group. Therefore, the substituted succinic acid of Brenda clearly overlaps formula (I).

Although Brenda does not specifically disclose the calcium carbonate as calcite or vaterite, since Brenda only broadly discloses a calcium carbonate and is therefore open to more specific embodiments, it would have been obvious to one of ordinary skill at the time of the invention for the carbonate to specifically comprise either calcite or vaterite.

Brenda does not specifically disclose the additives as added to a grease composition. However, Cain discloses a grease composition comprising such additives as detergents, anticorrosion agents, extreme pressure agents, and antiwear agents ([0017], [0217]). Since Brenda teaches additives with all of these properties, it would have been obvious for the additives of Brenda to be incorporated into the grease composition of Cain.

12. Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Olson (US 5,308,514).

Olson, as discussed in paragraph 7 and incorporated here by reference, discloses a grease composition comprised of an overbased organic acid, an acid producing compound, and lubricating oil. The process to prepare the composition, as disclosed by Olson, involves first mixing overbased calcium sulfonate, lubricating oil, and an acid producing compound (Example 1, column 8). Water, an aqueous solvent, was then added to the mixture followed by heating of the mixture to 280 degrees Fahrenheit (Example 1, column 8). The heating would intrinsically remove the water from the mixture by evaporation to produce a colloidal grease mixture. Olson further discloses adding additives to the grease mixture including viscosity index improvers (viscosity modifiers), oxidation inhibitors (rust inhibitors), and more (column 6, lines 8-19)

Olson does not disclose (i) the grease composition as specifically imparting improved water repellence, improved water wash-off, improved thickening, increased

longevity, or decreased wear and (ii) the specific use of phosphoric acid or succinic acid in Example 1 as the acid producing compound.

With respect to (i) above, since the composition disclosed by Olson is identical to the grease composition that is instantly claimed, the grease composition disclosed by Olson would intrinsically display the same properties that are instantly claimed.

With respect to (ii) above, although Olson uses boric acid in the specific example, phosphoric acid and succinic acid are also other embodiments of the invention that are disclosed which would have been obvious to utilize.

13. Claims 7, 8, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Olson (US 5,308,514) in view of Ney (US 5,932,525).

Olson, as discussed in paragraph 7 and incorporated here by reference, discloses a lubricating composition comprised of an overbased organic acid, an acid producing compound, and lubricating oil. Olson also discloses the addition of additives to the composition including polymers, which serve as viscosity index improvers (column 6, lines 8-16).

Olson does not specifically disclose a copolymer derived from an olefin and an unsaturated dicarboxylic acid anhydride.

Ney also discloses a lubricating composition with a polymer based viscosity index improver (column 1, lines 4-8). The viscosity index improver comprises a copolymer with olefin and dicarboxylic acid anhydride, specifically maleic anhydride,

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monomer units (column 6, lines 37-42; column 7, lines 15-18; column 8, lines 31-67).

This specific viscosity index improver aids in viscosity and dispersancy modification.

Since the polymer disclosed by Ney not only functions as a viscosity index improver, but also aids in dispersant properties, and Olson discloses a polymer viscosity index improver, it would have been obvious for Olson to utilize the viscosity index improver disclosed by Ney. Therefore, the invention of Olson would comprise an acid producing compound of a copolymer.

14. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Olson (5,308,514) in view of Muir (US 4,560,489) and Ney (US 5,392,525).

Given that the instant claims teach that succinic acid comprises a non-polymeric hydrocarbyl substituted dicarbonyl group, it is the examiner's position that the succinic acid of Olson reads on claim 1.

Olson, as discussed in paragraph 7 and incorporated here by reference, discloses a grease composition comprised of an overbased organic acid, an acid producing compound, and lubricating oil. The organic acid, calcium sulfonate, is present in the composition up to 28 wt% (column 2, lines 45-50). The acid producing compound is present from 0.6 to 3.5 wt% (column 5, lines 29-32). Although Olson discloses the specific wt% of boric acid, other embodiments of the acid producing compound include phosphoric acid and succinic acid so that it would have been obvious to utilize these compounds from 0.6 to 3.5 wt%. The lubricating oil is present from 60 to 90 wt% (column 5, lines 23-26). The performance additive phenyl alpha naphthylamine,

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an oxidation inhibitor, is present in the composition at 8.3 grams, wherein the total composition weighing 1,660 grams (Example 1, column 8). Therefore, 0.5 wt% of the performance additive is present in the grease composition. The compound 12-hydroxystearic is present in the composition from 1 to 6 wt% (column 5, lines 33-42).

Muir, as discussed in paragraph 12 and incorporated here by reference, discloses that 12-hydroxystearic acid is a known grease thickener.

Ney, as discussed in paragraph 11 and incorporated here by reference, discloses a composition comprised of a polymer functionalized with dicarboxylic acid anhydride as a viscosity index improver. This compound is present in a lubricating composition from 0.005 to 25 wt% (column 12, lines 29-31), so that it would have been obvious for Olson to utilize the viscosity index improver within this range.

15. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Olson (US 5,308,514) in view of Hayashi (US 4,670,173).

Olson, as discussed in paragraph 7 and incorporated here by reference, discloses a grease composition comprised of an overbased organic acid, an acid producing compound, and lubricating oil. The acid producing compound is further disclosed as succinic acid that is open to substitution.

Olson does not specifically disclose the succinic acid as being substituted with the instantly claimed hydrocarbyl groups.

Hayashi also discloses a grease composition comprised of hydrocarbyl substituted succinic acid (column 17, line 55 through column 18, line 3; column 22, lines

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10-24; column 22, line 68 through column 23, line 5). The hydrocarbyl substituent contains from 3 to 100 carbon atoms, which clearly overlaps the instant claim 5. This compound helps to aid as a viscosity improver in the grease composition (column 3, lines 54-68). It therefore, would have been obvious for Olson to also utilize a hydrocarbyl substituted succinic acid since this substituent is known in the art and it aids in viscosity improvement.

16. Claims 1, 5, 10, 12, 13, 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Olson (US 5,308,514) in view of Muir (US 4,560,489), Ney (US 5,392,525), and Hayashi (US 4,670,173).

Olson, as discussed in paragraph 7 and incorporated here by reference, discloses a composition comprised of an overbased organic acid, an acid producing compound, and lubricating oil.

Although Olson does not specifically disclose the succinic acid as substituted with a nonyl substituent, as stated in paragraph 15 and incorporated here by reference, it would have been obvious to one of ordinary skill in the art at the time of the invention.

Although Olson does not specifically disclose the composition as a grease Olson does teach the composition as comprising 12-hydroxystearic acid as a soap forming fatty acid (column 4, lines 14-19; Example 1, column 8). Muir teaches that 12-hydroxystearic acid is a known thickener to a grease composition (column 3, lines 9-17). Therefore Olson does in fact teach a thickening agent so that the lubricating composition would encompass a grease composition.

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Although Olson does not specifically disclose the composition comprising an unsaturated dicarboxylic, as stated in paragraph 14 and incorporated here by reference, it would have been obvious for the composition to comprise an unsaturated dicarboxylic acid anhydride in view of Ney.

The method to prepare the grease composition comprising a nonyl substituted succinic acid is disclosed in paragraph 12 and incorporated here by reference.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amy Lang whose telephone number is (571) 272-9057.

The examiner can normally be reached on Monday - Friday, 8:30 a.m. - 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anhtuan Nguyen can be reached on (571) 272-4963. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

02/28/2007
Amy T. Lang
ATL


ANH TUAN T. NGUYEN
SUPERVISORY PATENT EXAMINER
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